

**WHAT IS CLAIMED IS:**

1. A method for alarming on occurrence of cell secession of a mobile station in a mobile communication system, comprising the steps of:

receiving in a base station transceiver subsystem in the mobile communication system power-related information transmitted from a corresponding mobile station in the mobile communication system;

analyzing the power-related information received to determine whether the corresponding mobile station has seceded from a corresponding cell in the mobile communication system; and

transmitting cell secession alarm information to the corresponding mobile station when it is determined from the analyzed power-related information that the corresponding mobile station has seceded from the corresponding cell to enable the corresponding mobile station to perform a cell secession alarm operation.

2. The method as claimed in claim 1, further comprised of the analyzing the power-related information step comprises the step of determining whether a power level of the corresponding mobile station is less than a predetermined reference power level, a power level less than the predetermined reference power level indicating the corresponding mobile station has seceded from the corresponding cell in the mobile communication system.

1 3. The method as claimed in claim 2, further comprised of the step of transmitting cell  
2 secession alarm information comprises the step of transmitting a predetermined tone control message  
3 over a forward traffic channel in the mobile communication system indicating the corresponding  
4 mobile station has seceded from the corresponding cell in the mobile communication system.

1 4. The method as claimed in claim 3, further comprised of the cell secession alarm  
2 operation advising a user of the corresponding mobile station of a possible call drop.

1 5. The method as claimed in claim 1, further comprised of the step of transmitting cell  
2 secession alarm information comprises the step of transmitting a predetermined tone control  
3 message over a forward traffic channel in the mobile communication system indicating the  
4 corresponding mobile station has seceded from the corresponding cell in the mobile communication  
5 system.

1 6. The method as claimed in claim 1, further comprised of the cell secession alarm  
2 operation advising a user of the corresponding mobile station of a possible call drop.

1 7. A method for alarming on occurrence of cell secession of a mobile station in a private  
2 radio mobile communication system, comprising the steps of:  
3 receiving power-related information transmitted from a corresponding mobile station in a

4 corresponding cell in the private radio mobile communication system;

5 analyzing the power-related information received to determine whether the corresponding  
6 mobile station has seceded from the corresponding cell in the private radio mobile communication  
7 system; and

8 transmitting predetermined cell secession alarm information to the corresponding mobile  
9 station, when it is determined from the analyzed power-related information that the corresponding  
10 mobile station has seceded from the corresponding cell and when the corresponding mobile station  
11 is registered to use a private radio communication service and is having an extension call with  
12 another registered mobile station, so as to enable the corresponding mobile station to perform a cell  
13 secession alarm operation.

1 8. The method as claimed in claim 7, further comprised of the step analyzing the power-  
2 related information comprises the step of determining whether a power level of the corresponding  
3 mobile station is less than a predetermined reference power level, a power level less than the  
4 predetermined reference power level indicating the corresponding mobile station has seceded from  
5 the corresponding cell in the private radio mobile communication system.

1 9. The method as claimed in claim 8, further comprised of the step of transmitting  
2 predetermined cell secession alarm information comprises the step of transmitting a predetermined  
3 tone control message over a forward traffic channel in the private radio mobile communication

1 system indicating the corresponding mobile station has seceded from the corresponding cell in the  
2 private radio mobile communication system.

1 10. The method as claimed in claim 9, further comprised of the cell secession alarm  
2 operation advising a user of the corresponding mobile station of a possible call drop.

1 11. The method as claimed in claim 7, further comprised of the step of transmitting  
2 predetermined cell secession alarm information comprises the step of transmitting a predetermined  
3 tone control message over a forward traffic channel in the private radio mobile communication  
4 system indicating the corresponding mobile station has seceded from the corresponding cell in the  
5 private radio mobile communication system.

1 12. The method as claimed in claim 7, further comprised of the cell secession alarm  
2 operation advising a user of the corresponding mobile station of a possible call drop.

1 13. A method for alarming on occurrence of cell secession of a mobile station in a mobile  
2 communication system, comprising the steps of:

3 receiving in a base station transceiver subsystem in the mobile communication system a  
4 power control parameter of a corresponding mobile station in the mobile communication system  
5 from a corresponding base station controller in the mobile communication system;

6 receiving by the base station transceiver subsystem information as to a received power level  
7 from the corresponding mobile station, the received power level being determined by the  
8 corresponding mobile station measuring received power from the base station transceiver subsystem;  
9 detecting by the base station transceiver subsystem information as to a frame quality by  
10 determining a forward frame error rate from the received information as to the received power level  
11 from the corresponding mobile station;  
12 comparing the determined forward frame error rate with a value corresponding to the power  
13 control parameter received from the corresponding base station controller to provide a determined  
14 power level of the corresponding mobile station;  
15 determining when the determined power level of the corresponding mobile station decreases  
16 below a predetermined reference power level, a determined power level less than the predetermined  
17 reference power level indicating the corresponding mobile station has seceded from a corresponding  
18 cell in the mobile communication system; and  
19 transmitting cell secession alarm information to the corresponding mobile station when the  
20 determined power level is less than the predetermined reference power level indicating the  
21 corresponding mobile station has seceded from the corresponding cell in the mobile communication  
22 system.

1 14. The method as claimed in claim 13, further comprised of the information as to the  
2 received power level from the corresponding mobile station including at least one of a power

3 measurement report message as to the received power level from the corresponding mobile station  
4 and an erasure indicator bit as to an error detected field.

1 15. The method as claimed in claim 14, further comprised of the cell secession alarm  
2 operation advising a user of the corresponding mobile station of a possible call drop.

1 16. The method as claimed in claim 13, further comprised of the cell secession alarm  
2 operation advising a user of the corresponding mobile station of a possible call drop.

1 17. An apparatus for alarming on occurrence of cell secession of a mobile station in a  
2 mobile communication system, comprising:

3 a base station transceiver subsystem in the mobile communication system for receiving  
4 power-related information transmitted from a corresponding mobile station in the mobile  
5 communication system;

6 means for analyzing the power-related information received to determine whether the  
7 corresponding mobile station has seceded from a corresponding cell in the mobile communication  
8 system; and

9 means for transmitting cell secession alarm information to the corresponding mobile station  
10 when the means for analyzing determines that the corresponding mobile station has seceded from  
11 the corresponding cell to enable the corresponding mobile station to perform a cell secession alarm

operation.

18. The apparatus as claimed in claim 17, further comprised of the means for analyzing the power-related information comprising means for determining whether a power level of the corresponding mobile station is less than a predetermined reference power level, a power level less than the predetermined power level indicating the corresponding mobile station has seceded from the corresponding cell in the mobile communication system.

19. The apparatus as claimed in claim 18, further comprised of the means for transmitting cell secession alarm information comprising means for transmitting a predetermined tone control message over a forward traffic channel in the mobile communication system indicating the corresponding mobile station has seceded from the corresponding cell in the mobile communication system.

20. The apparatus as claimed in claim 19, further comprised of the cell secession alarm operation advising a user of the corresponding mobile station of a possible call drop.

21. The apparatus as claimed in claim 19, further comprised of the mobile communication system being a private radio mobile communication system.

1 22. The apparatus as claimed in claim 17, further comprised of the means for  
2 transmitting cell secession alarm information comprising means for transmitting a predetermined  
3 tone control message over a forward traffic channel in the mobile communication system indicating  
4 the corresponding mobile station has seceded from the corresponding cell in the mobile  
5 communication system.

1 23. The apparatus as claimed in claim 17, further comprised of the cell secession alarm  
2 operation advising a user of the corresponding mobile station of a possible call drop.

1 24. The apparatus as claimed in claim 17, further comprised of the mobile  
2 communication system being a private radio mobile communication system.